IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Kay Yut Chen et al.	§	Art Unit:	3691
Serial No.:	09/858,251	§		
		§	Examiner:	Siegfried E. Chencinski
Filed:	May 15, 2001	§		
For:	An Automated Decision Support System for Designing Auctions	§	Atty. Dkt. No.:	10014416-1 (HPC.0331US)

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

Dear Sir:

A Second Amended Appeal Brief is submitted herewith in response to the Notification of Non-Compliant Appeal Brief dated January 9, 2008.

The required summaries for claims 2, 4, 9, 11, 12, and 13 have been provided.

Respectfully submitted,

Date: 2/8/2008

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Date of Deposit: February 8, 2008

I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent Office (Fax No. (571) 273-8300), on the date indicated above.

Ginger Yount

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SECOND AMENDED APPEAL BRIEF PURSUANT TO 37 C.F.R § 41.37

Sir:

The final rejection of claims 1-23 is hereby appealed.

I. REAL PARTY IN INTEREST

The real party in interest is the Hewlett-Packard Development Company, L.P.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF THE CLAIMS

Claims 1-23 have been finally rejected and are the subject of this appeal.

Date of Deposit: February 8, 2008

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IV. STATUS OF AMENDMENTS

No amendment after final has been submitted.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element.

Independent claim 1 recites a computer-implemented automated decision support system (Fig. 1:10) for designing an auction for a given item, comprising:

> a structure extractor (Fig. 1:13; Fig. 2:13) that estimates unknown elements of market structure (Spec., 9:11-10:5) of the auction based on auction characteristics data extracted from historical auctions for similar items and a bidding model matching the extracted auction characteristics data (Spec., 10:19-11:8; 12:2-8; 12:16-15:21; Figs. 5-7);
>
> a bidding behavior predictor (Fig. 1:14; Fig. 3:14) that predicts bidding behaviors of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction (Spec., 17:15-19:14; Fig. 8);
>
> an optimizer (Fig. 1:15; Fig. 4:15) that employs an evaluation criterion to generate an evaluation of the auction based on (1) the estimated unknown elements of market structure and (2) the predicted bidding behavior of bidders (Spec., 19:15-21:8; Figs. 9-10).

Dependent claim 2 further recites:

> a report generator (Fig. 1:16) coupled to the optimizer and the structure extractor to generate a report from the evaluation of the auction (Spec., 21:9-16).

Dependent claim 3 further recites:

> the optimizer (Fig. 1:15) selects the best auction design candidates from the evaluation of the auction, and sends these best auction design candidates to an external auction implementation system to implement the auction (Spec., 21:3-22:1).

Dependent claims 4 further recites:

> the optimizer (Fig. 1:15) sends the best auction design candidates to the external auction implementation system via the Internet (Spec., 21:19-22:1).

Dependent claim 5 further recites:

> a historical auction data repository (Fig. 1:11) that stores historical auction data for a plurality of historical auctions of a plurality of items, including items similar to the given item (Spec., 11:25-12:15);
>
> a bidding model repository (Fig. 1:12) that stores a plurality of bidding models (Spec., 12:16-24).

Dependent claim 6 further recites that the structure extractor (Fig. 1:13, Fig. 2:13) further comprises:

> a data selection module (Fig. 2:20) that accesses an external historical auction data repository for the auction characteristics data of the historical auctions for the items similar to the given item based on an user input of the given item to be auctioned (Spec., 14:5-11);
>
> a bidding model selection module (Fig. 2:21) that selects, from an external bidding model repository, the bidding model matching the auction characteristics data (Spec., 14:21-24);
>
> a structure estimation module (Fig. 2:22) that combines the extracted auction characteristics data and the bidding model to estimate the unknown elements of market structure of the auction (Spec., 15:2-20).

Dependent claim 18 further recites that:

> the bidding model comprises one of an English auction bidding model, a Dutch auction bidding model, a first-price-sealed bid bidding model, and a Vickrey auction bidding model (Spec., 12:16-24).

Dependent claim 8 further recites that the behavior predictor (Fig. 3:14) further comprises:

> a bidding model selection module (Fig. 3:30) that selects, from an external bidding model repository, the bidding model matching the characteristics of the auction, wherein the characteristics of the auction is a user input (Spec., 18:15-23);
>
> a behavior prediction module (Fig. 3:31) that predicts the bidding behaviors of bidders in the auction by applying the estimated unknown elements of market structure into the extracted bidding model matching the user input of auction characteristics of the auction (Spec., 18:24-19:6).

Dependent claim 9 further recites that the optimizer (Fig. 4:15) further comprises:

> an outcome prediction module (Fig. 4:40) that receives a user input evaluation criterion and a user input of auction decision candidates to provide prediction for each of the auction decision candidates using the evaluation criterion and based on (1) the estimated unknown elements and (2) the predicted bidding behavior of bidders (Spec., 19:25-20:13);
>
> an optimal decision module (Fig. 4:41) that ranks the evaluation for each of the auction decision candidates (Spec., 20:14-16).

Dependent claim 7 further recites that the auction characteristics data are part of auction mechanism data that also include bid data, wherein the structure estimator estimates the unknown elements by:

> applying the bid data to the bidding model to invert the bidding model so as to express unobservable variables in the bidding model in terms of the bid data (Spec., 15:2-9);
>
> applying a statistical density estimation technique to the expression so as to obtain an estimate of the unknown elements (Spec., 15:9-11).

Dependent claim 19 further recites that:

> the auction characteristics data describe at least a reserve price of the given item, an auction format, and a number of bidders (Spec., 7:24-8:5).

Dependent claim 20 further recites that:

> the bidding behavior predictor to receive as input plural auction decision candidates that correspond to different types of auctions, wherein the bidding behavior predictor predicts bidding behaviors for the plural auction decision candidates (Spec., 21:3-8).

Independent claim 10 recites a computer-implemented method for providing an automated auction analysis, comprising:

> estimating unknown elements of market structure (Spec., 9:11-10:5) of the auction based on auction characteristics data extracted from historical auctions for similar items and a bidding model matching the extracted auction characteristics data (Spec., 10:19-11:8; 12:2-8; 12:16-15:21; Figs. 5-7);
>
> predicting bidding behaviors of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction (Spec., 17:15-19:14; Fig. 8);
>
> employing an evaluation criterion to generate an evaluation of the auction based on (1) the estimated unknown elements of market structure and (2) the predicted bidding behavior of bidders (Spec., 19:15-21:8; Figs. 9-10).

Dependent claim 11 further recites:

> the step of generating a report from the evaluation of the auction (Spec., 21:9-16).

Dependent claim 12 further recites:

> selecting the best auction design candidates from the evaluation of the auction (Spec., 21:3-8, 19-21);
>
> sending these best auction design candidates to an external auction implementation system to implement the auction (Spec., 21:17-19, 21:21-22:1).

Dependent claim 13 further recites:

> the best auction design candidates are sent to the external auction implementation system via the Internet (Spec., 21:19-22:1).

Dependent claim 14 further recites that the step of estimating the unknown elements of market structure of the auction further comprises:

> accessing an external historical auction data repository for the auction characteristics data of the historical auctions for the items similar to the given item based on an user input of the given item to be auctioned (Spec., 14:5-11);
>
> selecting, from an external bidding model repository, the bidding model matching the auction characteristics data (Spec., 14:21-24);
>
> combining the extracted auction characteristics data and the bidding model to estimate the unknown elements of market structure of the auction (Spec., 15:2-20).

Dependent claim 21 further recites that:

> estimating the unknown elements of the market structure of the auction is based on the bidding model selected from the group consisting of an English auction bidding model, a Dutch auction bidding model, a first-price-sealed bid bidding model, and a Vickrey auction bidding model (Spec., 12:16-24).

Dependent claim 17 further recites that the step of employing an evaluation criterion to generate an evaluation of the auction further comprises the steps of:

> receiving a user input evaluation criterion and a user input of candidate auction decisions to provide prediction for each of the candidate auction decisions using the evaluation criterion and based on (1) the estimated unknown elements and (2) the predicted bidding behavior of bidders (Spec., 19:25-20:13);
>
> ranking the evaluation for each of the candidate auction decisions (Spec., 20:14-16).

Dependent claim 16 further recites that the step of predicting bidding behaviors of bidders in the auction further comprises the steps of:

> selecting, from an external bidding model repository, the bidding model matching the characteristics of the auction, wherein the characteristics of the auction is a user input (Spec., 18:14-23);
>
> predicting the bidding behaviors of bidders in the auction by applying the estimated unknown elements of market structure into the extracted bidding model matching the user input of auction characteristics of the auction (Spec., 18:24-19:6).

Dependent claim 15 further recites that the step of combining the extracted auction characteristics data and the bidding model further comprises the steps of:

> applying bid data to the bidding model to invert the bidding model so as to express unobservable variables in the bidding model in terms of the bid data (Spec., 15:2-9);
>
> applying a statistical density estimation technique to the expression so as to obtain an estimation of the unknown elements (Spec., 15:9-11).

Dependent claim 22 further recites that:

> estimating the unknown elements of the market structure of the auction is based on the auction characteristics data including at least a reserve price of the given item, an auction format, and a number of bidders (Spec., 7:24-8:5).

Dependent claim 23 further recites:

> receiving as input plural auction decision candidates that refer to different types of auctions, wherein predicting the bidding behaviors comprises predicting bidding behaviors for the plural auction decision candidates (Spec., 21:3-8).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1, 2, 10, And 11 Rejected Under 35 U.S.C. § 103 Over U.S. Patent No. 5,101,353 (Lupien) In View Of U.S. Patent No. 6,792,399 (Phillips).

B. Claims 3-6, 12-14, 18, and 21 Rejected Under 35 U.S.C. § 103 Over Lupien In View Of Phillips And U.S. Patent No. 6,285,989 (Shoham).

C. Claims 8, 9, And 17 Rejected Under 35 U.S.C. § 103 Over Lupien In View Of Phillips And U.S. Patent No. 6,868,525 (Szabo).

D. Claim 16 Rejected Under 35 U.S.C. § 103 Over Lupien In View Of Phillips, Shoham, And Szabo.

E. Claims 7 And 15 Rejected Under 35 U.S.C. § 103 Over Lupien, Phillips, And Shoham In View Of Szabo And "Auction Models When Bidders Make Small Mistakes: Consequences For Theory And Estimation," By Patrick Bajari Et Al. (Bajari).

F. Claims 19, 20, 22, and 23 Rejected Under 35 U.S.C. § 103 Over Lupien, Phillips, And Shoham In View Of U.S. Patent No. 6,871,190 (Seymour).

VII. ARGUMENT

The claims do not stand or fall together. Instead, Appellant presents separate arguments for various independent and dependent claims. Each of these arguments is separately argued below and presented with separate headings and sub-headings as required by 37 C.F.R. § 41.37(c)(1)(vii).

A. Claims 1, 2, 10, And 11 Rejected Under 35 U.S.C. § 103 Over U.S. Patent No. 5,101,353 (Lupien) In View Of U.S. Patent No. 6,792,399 (Phillips).

1. Claims 1 and 2.

The Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 1, for at least the following reasons: (1) no motivation or suggestion existed to combine the reference teachings; and (2) the hypothetical combination of Lupien and Phillips does not teach or suggest all elements of claim 1. *See* M.P.E.P. § 2143 (8th ed., Rev. 5), at 2100-126.

Lupien was relied upon as being the primary reference, with Phillips cited by the Examiner as teaching claim features not taught by Lupien. Specifically, the Examiner conceded that Lupien does not disclose a bidding model and predicting bidding behaviors. 8/10/2006 Office Action at 3. However, the Examiner relied upon Phillips as disclosing those features conceded by the Examiner as missing from Lupien. *Id.*

As explained below, the Examiner's obviousness analysis is defective, as no motivation or suggestion existed to combine the teachings of Lupien and Phillips, and moreover, even if they can be properly combined, the combination of Lupien and Phillips does not teach or suggest all elements of claim 1.

Moreover, the Examiner made several erroneous assertions regarding teachings of Lupien and Phillips. The first point of error made by the Examiner is the following statement:

> The underlying bidding model used in the analysis is implicit since there would be no basis on which for making any assumptions without a model. This implicit model produces the estimates of market structure based on the assumptions made in applying the model. It would be highly improbable bordering on irrationality to perform an auction analysis without making any assumptions.

8/10/2006 Office Action at 2.

This statement was made the Examiner to support the assertion in the Office Action that Lupien discloses estimating unknown elements of market structure of the auction based on auction characteristics data extracted from historical auctions for similar items and a *bidding model matching the extracted auction characteristics data. Id.* The cited passages of Lupien (Abstract, lines 16-18; column 3, lines 19-22; column 9, lines 61-67) refer to a system that (1) monitors and analyses a variety of factors that affect trading decisions on securities, (2) estimates a security's price variability, cash flows, and a number of investment characteristics such as industry and sector exposures, earnings/price and debt/equity ratios, and (3) estimates a normal

price of a security based on recent trades and/or quotations adjusted for overall market movement. However, estimating a security's price variability, cash flows, industry and sector exposures, earnings/price, and debt/equity ratios, and normal prices of securities, as taught by the passages of Lupien cited by the Examiner on page 2 of the Office Action, is clearly not based on any *bidding model matching the extracted auction characteristics data,* as recited in claim 1. The Examiner made the statement that the "underlying bidding model used in the analysis is implicit since there would be no basis on which for making any assumptions without a model." It is unclear what "underlying bidding model" the Examiner is referring to. Moreover, and even more fundamentally, the reference to "underlying bidding model" is clearly not the "bidding model matching the extracted auction characteristics data" recited in claim 1.

Also, estimating the various factors taught in the cited passages of columns 3 and 9 of Lupien is clearly not based on a *bidding model.* In fact, the estimated security's price variability, cash flows, industry and sector exposures, earnings/price and debt/equity ratios, are estimated based on monitored past security trades, and not based on any model. Similarly, the "normal price" that is estimated in column 9 of Lupien is based on recent trades and/or quotations, not based on a bidding model. Therefore, the assertion by the Examiner that the bidding model used in the context of claim 1 would be implicitly present in Lupien is clearly erroneous. This is a first point of error that establishes that the obviousness rejection is defective.

A further point of error made in the Office Action is the statement that "the predicting of bidding behaviors obviously underlies the process leading to action decisions for participating in the auction process involved in security markets, since it would be highly improbable bordering on being irrational to perform an auction analysis without making any assumptions and without

implicitly if not explicitly using some kind of model in the process." 8/10/2006 Office Action at 3.

Lupien describes a system that monitors and analyzes a variety of factors to determine trading positions for securities, where the factors include other security trades, price and size quotations, and financial ratios for particular securities. Lupien, Abstract. The system is an automated securities trading and portfolio management system for use by investment managers, especially for use with large portfolios including a large number of securities. Lupien, 2:60-68. The system selects and executes trades based on analysis of transactions and imposition of controls. Lupien, 4:61-64. There is absolutely no indication or suggestion in Lupien of a bidding behavior predictor that predicts behaviors of bidders in the auction based on the estimated unknown elements of the market structure and the extracted auction characteristics data. Lupien mentions various factors that are considered in deciding whether to make a trade, and none of these factors involve predicting bidding behaviors of bidders in an auction.

Moreover, the Examiner's statement that "since it would be highly improbable bordering on being irrational to perform an auction analysis without making any assumptions and without implicitly if not explicitly using some kind of model in the process" made on page 3 of the Office Action has nothing to do with any suggestion of using a bidding behavior predictor that *predicts bidding behaviors of bidders* in the auction based on the estimated unknown elements of market structure and characteristics of the auction.

As a further point of error, in the "Response to Arguments" section on page 5 of the Office Action, the Examiner made the following assertion to support the obviousness rejection:

> [A]nyone who participates in the auction process involved in securities markets is engaging in the predicting of bidding behavior. If one is selling a security (not for reasons of necessity but strictly because one wants to position a securities portfolio for future profit maximization), one is predicting in some manner that

> the bidders in the future will collectively bid the security down, or that they will provide tepid support for the increase in its value, or that the support the security gets will be less than other alternatives satisfactory to the decision maker. The prediction may be based on a whim, or on an elaborate analysis. It is never the less an application of prediction of bidding behavior.

8/10/2006 Office Action at 12.

The statement that "anyone who participates in the auction process" is engaging in the predicting of bidding behavior has no relevance to the claimed subject matter, which recites a bidding behavior predictor that predicts bidding behaviors of bidders in the auction based on estimated unknown elements of market structure and characteristics of the auction. Clearly, a human using the Lupien system would not be predicting bidding behaviors of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction. Moreover, claim 1 recites a computer-implemented automated decision support system, in which the bidding behavior predictor is part of this computer-implemented automated decision support system. A human being that is making a prediction "based on a whim, or on an elaborate analysis" (as asserted by the Office Action) has nothing to do with this bidding behavior predictor that is part of the computer-implemented automated decision support system.

Another point of error made by the Examiner is the assertion that Phillips teaches or suggests the elements that are missing from Lupien (discussed above). Contrary to the Examiner's assertion, Phillips fails to teach or suggest the predicting of bidding behaviors of bidders. The Examiner cited to various passages of Phillips regarding the forecasting of values of variables, such as the price of a share of stock or a commodity. *See* 8/10/2006 Office Action at 3. Phillips is concerned about improving techniques for forecasting such values of variables, including stock or commodity prices. Phillips, 1:8-10. In columns 3-6 of Phillips, reference is made to various conventional techniques of forecasting stock prices that the author of Phillips

believes suffer various drawbacks. To improve forecasting, Phillips proposes the use of a forecasting *contest* in which participants are encouraged to make the most accurate predictions possible to provide a "highly valuable" database of forecasts. Phillips, 14:17-45. This *contest* involves *participants entering what they believe* to be predicted values for variables, such as stock or commodity prices. Providing a *contest* in which participants predict stock or commodity prices is entirely different from providing a bidding behavior predictor that *predicts bidding behaviors* of bidders in an auction based on estimated unknown elements of market structure and the characteristics of the auction.

In view of the foregoing, it is clear that the hypothetical combination of Lupien and Phillips clearly does not teach or suggest all elements of claim 1. A *prima facie* case of obviousness has therefore not been established for at least hits reason.

The Examiner's citation of the following Federal Circuit case does not remedy the various points of error in the obviousness rejection: *In re Kahn*, 441 F.3d 977, 78 U.S.P.Q.2d 1329 (Fed. Cir. 2006). *In re Kahn* stands for the unremarkable proposition that a suggestion, teaching, or motivation to combine relevant prior art teachings does not have to be found *explicitly* in the prior art, since such teaching, motivation, or suggestion "may be implicit from the prior art ...." *In re Kahn*, 441 F.3d at 987. However, the defects in the obviousness rejection cannot be remedied by any implicit teachings of Lupien and Phillips. As discussed above, neither Lupien nor Phillips provides any teachings or suggestion, either implicit or explicit, of the following elements of claim 1:

- a structure extractor that estimates unknown elements of market structure of the auction based on auction characteristics data extracted from historical auctions for similar items and a *bidding model matching the extracted auction characteristics data*; and

- a bidding behavior predictor that *predicts bidding behaviors* of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction.

In addition to the fact that the hypothetical combination of Lupien and Phillips fails to teach or suggest all elements of claim 1, it is respectfully submitted that no motivation or suggestion existed, either explicitly or implicitly, to combine the teachings of Lupien and Phillips. As discussed above, Lupien describes an automated securities trading and portfolio management system for use by investment managers, which system selects and executes trades based on analysis of transactions and the imposition of controls. Lupien, 4:61-64. On the other hand, Phillips describes use of a forecasting *contest* in which participants are encouraged to make the most accurate predictions possible regarding predicted values for stock or commodity prices. The contest system, as taught by Phillips, in which contestants are encouraged to provide their best estimates for stock or commodity prices, has nothing to do with the automated trading and portfolio management system of Lupien. A person of ordinary skill in the art clearly would not have been motivated to incorporate the teachings of Phillips into Lupien. In fact, incorporating the teachings of Phillips into Lupien would render the system of Lupien inoperative for its intended purpose. The automated securities trading and portfolio management system of Lupien estimates various factors based on real time monitoring of trades, price and size quotations, and portfolio characteristics. Lupien, 3:7-9. If the contest technique of Phillips were to be incorporated into Lupien, then Lupien would be making its trading and management decisions based on what contestants believe stock prices should be, not on real time monitoring of trades and price quotations. This clearly would render Lupien inoperative for its intended purpose.

Therefore, no motivation or suggestion existed to combine the teachings of Lupien and Phillips. This is another reason that a *prima facie* case of obviousness has not been established.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

2. Claims 10 and 11.

Independent claim 10 was also rejected as being obvious over the asserted combination of Lupien and Phillips. As discussed above, no motivation or suggestion existed to combine the teachings of Lupien and Phillips. Therefore, the obvious rejection of claim 10 is defective for at least this reason.

Moreover, for reasons similar to those stated above with respect to claim 1, the hypothetical combination of Lupien and Phillips fails to disclose or suggest the following elements:

- estimating unknown elements of market structure of the auction based on auction characteristics data extracted from historical auctions for similar items and *a bidding model matching the extracted auction characteristics data*;
- *predicting bidding behaviors* of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

B. Claims 3-6, 12-14, 18, and 21 Rejected Under 35 U.S.C. § 103 Over Lupien In View Of Phillips And U.S. Patent No. 6,285,989 (Shoham).

1. Claims 3, 4, 12, and 13.

In view of the defective obviousness rejection of base claims 1 and 10 over Lupien and Phillips, it is respectfully submitted that the obviousness rejection of dependent claims 3, 4, 12, and 13 over Lupien, Phillips, and Shoham is also defective.

Moreover, it is respectfully submitted that a prima facie case of obviousness has not been established with respect to these claims for at least the reason that the hypothetical combination of the cited references does not teach or suggest all elements of these claims.

With respect to claim 3, the Examiner conceded that Lupien and Phillips does not teach or suggest the elements recited in claim 3. 8/10/2006 Office Action 4. However, the Examiner cited Shoham as disclosing the claim elements. In particular, the Examiner cited column 4, lines 37-45, as disclosing the elements of claim 3. The cited passage of Shoham refers to a method and apparatus for designing and deploying an interactive, real-time universal on-line trading market system serving traders communicating via the Internet. The cited passage also refers to building any type of online auction using building blocks of software technology, and using a generic tool kit to build auction solutions ranging from simple to very complex. However, nowhere within this cited passage of Shoham, or anywhere else in Shoham, is there any suggestion of selecting the best auction design candidates from *the evaluation of the auction*, which evaluation is generated by an optimizer based on the estimated unknown elements of market structure and the predicted bidding behavior of bidders.

Claims 4, 12, and 13 are similarly allowable.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

2. Claim 5.

In view of the defective obviousness rejection of base claims 1 and 10 over Lupien and Phillips, it is respectfully submitted that the obviousness rejection of dependent claim 5 over Lupien, Phillips, and Shoham is also defective. Moreover, with respect to claim 5, there is no teaching or suggestion of a bidding model repository that stores a *plurality* of bidding models, as recited in claim 5. In fact, in the rejection of claim 5, the Examiner makes no reference to how either Lupien or Phillips teaches or suggests a bidding model repository that stores a *plurality* of bidding models. Therefore, the obviousness rejection of claim 5 is defective for this additional reason.

Reversal of the final rejection of the above claim is respectfully requested.

3. Claims 6 and 14.

In view of the defective obviousness rejection of base claims 1 and 10 over Lupien and Phillips, it is respectfully submitted that the obviousness rejection of claims 6 and 14 over Lupien, Phillips, and Shoham is defective. Moreover, the Examiner incorrectly asserted that Shoham teaches selecting, from an external bidding model repository, a bidding model matching the auction characteristics data. The Examiner cited column 4, lines 41-54, of Shoham as disclosing this feature of claims 6 and 14. The cited passage of Shoham describes building an online auction and using a universal auction specification system for combining a set of primitives into a temporal protocol script representing a particular auction specification. There is no teaching or suggestion here of selecting a model from an external bidding model repository that matches the auction characteristics data.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

4. Claims 18 and 21.

In view of the defective obviousness rejection of base claims 1 and 10 over Lupien and Phillips, it is respectfully submitted that the obviousness rejection of dependent claims 18 and 21 is also defective.

Reversal of the final rejection of the above claims is respectfully requested.

C. Claims 8, 9, And 17 Rejected Under 35 U.S.C. § 103 Over Lupien In View Of Phillips And U.S. Patent No. 6,868,525 (Szabo).

1. Claim 8.

In view of the defective obviousness rejection of base claim 1 over Lupien and Phillips, it is respectfully submitted that the obviousness rejection of dependent claim 8 over Lupien, Phillips, and Szabo is defective. Moreover, with respect to claim 8, the Examiner conceded that Lupien and Phillip do not disclose a bidding model selection module that selects a bidding model matching the characteristics of an auction, where the characteristics of the auction is a user input. 8/10/2006 Office Action at 7. However, the Examiner erroneously cited Szabo as disclosing this feature. Specifically, the Examiner cited column 5, lines 38-41, of Szabo as disclosing the user input recited in claim 8. This assertion is erroneous, as claim 8 recites selecting a bidding model matching characteristics of an auction, where the characteristics of the auction is a user input. On the other hand, the cited passage in column 5 of Szabo refers to a GUI that a user can use to input demographic, psychographic, and other profile information of a consumer, where demographic information refers to vital statistics of individuals, and psychographic information refers to lifestyle and behavioral characteristics of individuals. There is absolutely no suggestion provided in Szabo that what the user input is auction characteristics data. Therefore, the obviousness rejection of claim 8 is defective for this additional reason.

Reversal of the final rejection of the above claim is respectfully requested.

2. Claims 9 and 17.

In view of the defective obviousness rejection of base claims 1 and 10 over Lupien and Phillips, it is respectfully submitted that the obviousness rejection of claims 9 and 17 over Lupien, Phillips, and Szabo is defective. Moreover, the Examiner erroneously states that Szabo teaches or suggests an outcome prediction module that receives a user input evaluation criterion and user input auction decision candidates to provide prediction for each of the auction decision candidates using the evaluation criterion. As discussed above with respect to claim 8, Szabo has nothing to do with receiving user input to provide prediction for auction decision candidates. Therefore, the obviousness rejection is defective for this additional reason.

Reversal of the final rejection of the above claims is respectfully requested.

D. Claim 16 Rejected Under 35 U.S.C. § 103 Over Lupien In View Of Phillips, Shoham, And Szabo.

1. Claim 16.

In view of the defective obviousness rejection of base claim 10 over Lupien and Phillips, it is respectfully submitted that the obviousness rejection of claim 16 over Lupien, Phillips, Shoham, and Szabo is also defective. Moreover, the Examiner erroneously asserts that Szabo discloses selecting a bidding model matching the characteristics of the auction, where the characteristics of the auction is a user input. See arguments above with respect to claim 8.

Reversal of the final rejection of the above claim is respectfully requested.

E. Claims 7 And 15 Rejected Under 35 U.S.C. § 103 Over Lupien, Phillips, And Shoham In View Of Szabo And "Auction Models When Bidders Make Small Mistakes: Consequences For Theory And Estimation," By Patrick Bajari Et Al. (Bajari).

1. Claims 7 and 15.

In view of the defective obviousness rejection of base claims 6 and 14 over Lupien, Phillips, and Shoham, it is respectfully submitted that the obviousness rejection of dependent claims 7 and 15 over Lupien, Phillips, Shoham, and Bajari is also defective.

Reversal of the final rejection of the above claims is respectfully requested.

F. Claims 19, 20, 22, and 23 Rejected Under 35 U.S.C. § 103 Over Lupien, Phillips, And Shoham In View Of U.S. Patent No. 6,871,190 (Seymour).

1. Claims 19, 20, 22, and 23.

In view of the defective obviousness rejection of base claims 1 and 10 over Lupien and Phillips, it is respectfully submitted that the obviousness rejection of dependent claims 19, 20, 22, and 23 over Lupien, Phillips, Shoham, and Seymour is also defective.

Reversal of the final rejection of the above claims is respectfully requested.

VIII. CONCLUSION

In view of the foregoing, reversal of all final rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,

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APPENDIX OF APPEALED CLAIMS

The claims on appeal are:

1. A computer-implemented automated decision support system for designing an auction for a given item, comprising:

a structure extractor that estimates unknown elements of market structure of the auction based on auction characteristics data extracted from historical auctions for similar items and a bidding model matching the extracted auction characteristics data;

a bidding behavior predictor that predicts bidding behaviors of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction;

an optimizer that employs an evaluation criterion to generate an evaluation of the auction based on (1) the estimated unknown elements of market structure and (2) the predicted bidding behavior of bidders.

2. The system of claim 1, further comprising a report generator coupled to the optimizer and the structure extractor to generate a report from the evaluation of the auction.

3. The system of claim 1, wherein the optimizer selects the best auction design candidates from the evaluation of the auction, and sends these best auction design candidates to an external auction implementation system to implement the auction.

4. The system of claim 3, wherein the optimizer sends the best auction design candidates to the external auction implementation system via the Internet.

5. The system of claim 1, further comprising

a historical auction data repository that stores historical auction data for a plurality of historical auctions of a plurality of items, including items similar to the given item;

a bidding model repository that stores a plurality of bidding models.

6. The system of claim 1, wherein the structure extractor further comprises

a data selection module that accesses an external historical auction data repository for the auction characteristics data of the historical auctions for the items similar to the given item based on an user input of the given item to be auctioned;

a bidding model selection module that selects, from an external bidding model repository, the bidding model matching the auction characteristics data;

a structure estimation module that combines the extracted auction characteristics data and the bidding model to estimate the unknown elements of market structure of the auction.

7. The system of claim 6, wherein the auction characteristics data are part of auction mechanism data that also include bid data, wherein the structure estimator estimates the unknown elements by

applying the bid data to the bidding model to invert the bidding model so as to express unobservable variables in the bidding model in terms of the bid data;

applying a statistical density estimation technique to the expression so as to obtain an estimate of the unknown elements.

8. The system of claim 1, wherein the behavior predictor further comprises

a bidding model selection module that selects, from an external bidding model repository, the bidding model matching the characteristics of the auction, wherein the characteristics of the auction is a user input;

a behavior prediction module that predicts the bidding behaviors of bidders in the auction by applying the estimated unknown elements of market structure into the extracted bidding model matching the user input of auction characteristics of the auction.

9. The system of claim 1, wherein the optimizer further comprises

an outcome prediction module that receives a user input evaluation criterion and a user input of auction decision candidates to provide prediction for each of the auction decision candidates using the evaluation criterion and based on (1) the estimated unknown elements and (2) the predicted bidding behavior of bidders;

an optimal decision module that ranks the evaluation for each of the auction decision candidates.

10. A computer-implemented method for providing an automated auction analysis, comprising:

estimating unknown elements of market structure of the auction based on auction characteristics data extracted from historical auctions for similar items and a bidding model matching the extracted auction characteristics data;

predicting bidding behaviors of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction;

employing an evaluation criterion to generate an evaluation of the auction based on (1) the estimated unknown elements of market structure and (2) the predicted bidding behavior of bidders.

11. The method of claim 10, further comprising the step of generating a report from the evaluation of the auction.

12. The method of claim 10, further comprising the steps of

selecting the best auction design candidates from the evaluation of the auction;

sending these best auction design candidates to an external auction implementation system to implement the auction.

13. The method of claim 12, wherein the best auction design candidates are sent to the external auction implementation system via the Internet.

14. The method of claim 10, wherein the step of estimating the unknown elements of market structure of the auction further comprises

accessing an external historical auction data repository for the auction characteristics data of the historical auctions for the items similar to the given item based on an user input of the given item to be auctioned;

selecting, from an external bidding model repository, the bidding model matching the auction characteristics data;

combining the extracted auction characteristics data and the bidding model to estimate the unknown elements of market structure of the auction.

15. The method of claim 14, wherein the step of combining the extracted auction characteristics data and the bidding model further comprises the steps of

applying bid data to the bidding model to invert the bidding model so as to express unobservable variables in the bidding model in terms of the bid data;

applying a statistical density estimation technique to the expression so as to obtain an estimation of the unknown elements.

16. The method of claim 10, wherein the step of predicting bidding behaviors of bidders in the auction further comprises the steps of

selecting, from an external bidding model repository, the bidding model matching the characteristics of the auction, wherein the characteristics of the auction is a user input;

predicting the bidding behaviors of bidders in the auction by applying the estimated unknown elements of market structure into the extracted bidding model matching the user input of auction characteristics of the auction.

17. The method of claim 10, wherein the step of employing an evaluation criterion to generate an evaluation of the auction further comprises the steps of

receiving a user input evaluation criterion and a user input of candidate auction decisions to provide prediction for each of the candidate auction decisions using the evaluation criterion and based on (1) the estimated unknown elements and (2) the predicted bidding behavior of bidders;

ranking the evaluation for each of the candidate auction decisions.

18. The system of claim 1, wherein the bidding model comprises one of an English auction bidding model, a Dutch auction bidding model, a first-price-sealed bid bidding model, and a Vickrey auction bidding model.

19. The system of claim 1, wherein the auction characteristics data describe at least a reserve price of the given item, an auction format, and a number of bidders.

20. The system of claim 1, the bidding behavior predictor to receive as input plural auction decision candidates that correspond to different types of auctions, wherein the bidding behavior predictor predicts bidding behaviors for the plural auction decision candidates.

21. The method of claim 10, wherein estimating the unknown elements of the market structure of the auction is based on the bidding model selected from the group consisting of an English auction bidding model, a Dutch auction bidding model, a first-price-sealed bid bidding model, and a Vickrey auction bidding model.

22. The method of claim 10, wherein estimating the unknown elements of the market structure of the auction is based on the auction characteristics data including at least a reserve price of the given item, an auction format, and a number of bidders.

23. The method of claim 10, further comprising receiving as input plural auction decision candidates that refer to different types of auctions, wherein predicting the bidding behaviors comprises predicting bidding behaviors for the plural auction decision candidates.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.